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THE FROST.

So much regret has been expressed at our intention to omit further reference to this subject in the *Meteorological Magazine*, that we have made a compromise. As originally proposed, we have passed on to Mr. Charles Harding for the paper which he will read at the meeting of the Royal Meteorological Society, on February 18th, all the notes and memoranda which we have been able to collect. But we have prepared from the English and Continental Daily Weather Reports the tables given on two following pages, as our contribution towards the record of the frost.

It will be seen that we have taken only one single element—the lowest temperature on each day, at twenty localities very widely spread over Western Europe, and including also Algiers, as it has now a large influx of European visitors during the winter.

The temperatures are, as will be seen, given merely to the nearest degree, and that is the reason for some entries which, as far as we know, are new to meteorology, viz. : — 0 ; most readers would consider the entry a misprint, but it is not. In whole degrees 0 F. represents all readings between $-17^{\circ}5$ C. and $-18^{\circ}1$ C., but by adding or omitting the — sign, we can indicate from $-17^{\circ}5$ C. to $-17^{\circ}8$ C. by +0, and $-17^{\circ}8$ to $-18^{\circ}1$ by —0. It will further be noticed that two kinds of type are used in these tables, all readings below 32° being in heavy type.

We hope that the tables, including the little abstract one, are self-explanatory, except perhaps the fourth column of the last, which is based upon the three previous columns. It was obtained by giving rotation numbers to the entries in the previous columns, and then adding those for each station and placing the names in the order thus obtained—*e.g.* :

Average Min.	Absolute Min.	Nights below 32° .	Resultant order.
1 Algiers	1 Monaco	1 Lisbon	5 Lisbon
2 Lisbon	2 Lisbon	2 Monaco	6 Monaco
3 Monaco	3 Scilly	3 Algiers	9 Algiers
4 Scilly	4 Valencia	4 Valencia	14 Valencia
5 Rome	5 Algiers	5 Rome	15 Scilly

[Cont. on p. 4.

MINIMUM TEMPERATURES IN WESTERN EUROPE AND ALGERIA.

DATE.	SWEDEN.	SCOTLAND.	SCOTLAND.	SCOTLAND.	IRELAND.	IRELAND.	ENGLAND.	ENGLAND.	ENGLAND.	BELGIUM.	DATE.
	Stockholm.	Shetland, Sumburghhead.	Lewis, Stornoway.	Leith.	Donegal, Malin Head.	Valencia.	York.	London.	Scilly.	Brussels.	
Dec. 13	18	41	37	27	36	40	30	24	39	19	13 Dec.
" 14	23	37	39	23	35	45	20	18	38	17	14 "
" 15	23	35	39	27	37	42	21	19	40	12	15 "
" 16	28	38	36	36	38	35	28	24	40	9	16 "
" 17	18	36	27	34	32	33	32	26	34	11	17 "
" 18	16	36	36	31	32	36	30	26	35	11	18 "
" 19	16	34	33	25	33	39	26	27	42	12	19 "
" 20	27	34	33	27	35	35	21	19	42	23	20 "
" 21	21	32	29	24	34	33	15	23	39	29	21 "
" 22	27	33	30	22	33	33	14	14	40	25	22 "
" 23	23	40	42	30	37	43	16	15	44	24	23 "
" 24	25	41	36	29	38	37	27	27	41	21	24 "
" 25	25	43	41	27	35	37	27	22	39	19	25 "
" 26	25	34	30	34	40	32	29	24	40	22	26 "
" 27	27	35	31	35	36	32	31	30	39	21	27 "
" 28	28	37	33	35	34	33	31	27	36	(16)	28 "
" 29	14	37	31	30	35	32	31	29	36	8	29 "
" 30	16	36	30	34	35	34	31	25	31	3	30 "
" 31	12	35	33	36	36	31	29	20	30	7	31 "
Jan. 1	12	37	35	36	33	34	30	25	37	12	1 Jan.
" 2	23	39	38	31	38	28	30	27	46	22	2 "
" 3	19	37	39	34	35	29	28	27	46	20	3 "
" 4	16	30	33	36	39	34	30	27	44	32	4 "
" 5	19	28	30	31	35	35	30	30	39	30	5 "
" 6	4	29	28	30	34	31	21	26	31	21	6 "
" 7	3	35	26	27	31	29	18	25	30	18	7 "
" 8	3	34	32	21	30	35	20	25	31	22	8 "
" 9	10	38	34	30	34	40	24	25	39	13	9 "
" 10	—0	38	34	25	33	33	28	15	40	16	10 "
" 11	3	42	40	27	31	39	22	14	36	12	11 "
" 12	3	45	48	42	41	41	25	18	38	17	12 "
" 13	16	44	46	42	43	32	32	24	39	28	13 "
" 14	14	33	34	37	40	33	33	34	42	31	14 "
" 15	23	30	31	32	38	38	29	30	38	27	15 "
" 16	14	33	37	34	41	38	30	31	39	22	16 "
" 17	12	30	35	29	40	36	25	25	29	4	17 "
" 18	7	31	37	22	30	36	10	22	29	5	18 "
" 19	3	36	33	23	31	37	11	21	31	19	19 "
" 20	10	39	33	33	28	40	17	23	32	11	20 "
" 21	21	27	25	26	31	40	31	31	43	19	21 "
" 22	23	28	25	28	37	41	30	29	42	21	22 "
Mean....	16·3	35·5	34·1	30·3	35·2	35·6	25·4	24·2	37·7	17·8	
Lowest..	0	27°	25°	21°	28°	28°	10°	14°	29°	3°	
Nights below 32°	41	8	13	25	7	5	38	40	8	40	

MINIMUM TEMPERATURES IN WESTERN EUROPE AND ALGERIA.

DATE.	GERMANY.	FRANCE.	GERMANY.	AUSTRIA.	FRANCE.	FRANCE.	MONACO.	ITALY.	PORTUGAL.	ALGERIA.	DATE.
	Berlin.	Paris.	Munich.	Vienna.	Biarritz.	Purpignan.	The Riviera, Monaco.	Rome.	Lisbon.	Algiers.	
Dec. 13	30	17	7	14	36	35	40	30	48	50	13 Dec.
" 14	21	15	5	10	27	29	40	37	50	46	14 "
" 15	10	8	5	12	32	30	39	32	50	48	15 "
" 16	9	9	7	19	41	36	40	27	50	52	16 "
" 17	(17)	20	(15)	21	45	29	40	41	48	52	17 "
" 18	14	20	14	10	32	33	43	46	48	48	18 "
" 19	7	22	7	10	41	28	40	36	50	46	19 "
" 20	14	35	9	18	43	33	41	43	45	52	20 "
" 21	30	28	9	14	30	32	41	41	46	48	21 "
" 22	18	29	1	14	39	36	49	41	43	43	22 "
" 23	25	25	3	25	32	41	47	45	46	45	23 "
" 24	25	23	16	21	37	39	48	41	46	46	24 "
" 25	23	20	19	25	28	25	45	36	37	48	25 "
" 26	19	19	19	21	28	28	43	39	39	48	26 "
" 27	14	24	19	18	27	26	43	39	37	48	27 "
" 28	5	19	14	3	27	29	48	45	37	45	28 "
" 29	5	19	-0	-2	34	31	48	41	45	48	29 "
" 30	3	11	1	-2	36	34	41	32	48	48	30 "
" 31	1	15	3	10	43	46	39	39	48	52	31 "
Jan. 1	7	29	3	1	43	50	48	39	48	52	1 Jan.
" 2	14	21	3	1	46	50	51	37	50	52	2 "
" 3	10	22	5	12	48	47	48	34	50	50	3 "
" 4	12	33	18	9	45	43	48	34	43	50	4 "
" 5	12	33	23	9	39	39	46	36	48	50	5 "
" 6	19	21	16	16	28	36	44	41	48	52	6 "
" 7	16	19	7	18	18	24	43	43	34	50	7 "
" 8	14	17	9	18	21	25	42	46	34	39	8 "
" 9	10	11	10	18	23	29	37	36	46	34	9 "
" 10	14	15	10	18	14	29	37	36	43	39	10 "
" 11	19	14	10	27	25	25	44	36	36	39	11 "
" 12	23	17	12	18	25	25	45	34	37	43	12 "
" 13	32	35	18	25	30	35	46	34	39	46	13 "
" 14	34	28	21	21	30	34	45	34	39	43	14 "
" 15	25	30	21	23	30	33	40	34	39	43	15 "
" 16	12	25	9	19	27	28	31	32	37	39	16 "
" 17	-0	10	-2	10	21	21	31	25	41	39	17 "
" 18	-2	9	-0	7	10	17	33	32	39	34	18 "
" 19	23	21	1	7	18	20	35	30	30	28	19 "
" 20	16	8	3	14	23	25	39	23	32	30	20 "
" 21	16	29	10	14	28	27	40	27	32	36	21 "
" 22	25	27	12	12	45	41	39	36	48	48	22 "
Mean....	15.6	20.8	9.6	14.1	31.6	32.3	42.1	36.3	42.8	45.1	
Lowest..	-2°	8°	-2°	-2°	10°	16°	31°	23°	30°	28°	
Nights below 32°	39	37	41	41	21	21	2	6	1	2	

Average Minimum.	Absolute Minimum.	Nights below 32°	Resultant Order.
Algiers 45·1	Monaco 31	Lisbon 1	Lisbon.
Lisbon 42·8	Lisbon 30	Monaco 2	Monaco.
Monaco 42·1	Scilly Isles... 29	Algiers 2	Algiers.
Scilly Isles.. 37·7	Valencia..... 28	Valencia..... 5	Valencia.
Rome..... 36·3	Algiers 28	Rome 6	Scilly.
Valencia ... 35·6	Donegal 28	Donegal 7	Rome.
Shetland ... 35·5	Shetland.. ... 27	Shetland..... 8	Donegal.
Donegal..... 35·2	Lewis 25	Scilly 8	Shetland.
Lewis..... 34·1	Rome 23	Lewis 13	Lewis.
Perpignan... 32·3	Leith 21	Perpignan ... 21	Perpignan.
Biarritz 31·6	Perpignan ... 17	Biarritz 21	Leith.
Leith 30·3	London 14	Leith 25	Biarritz.
York 25·4	York 10	Paris 37	York.
London 24·2	Biarritz 10	York 38	London.
Paris 20·8	Paris 8	Berlin 39	Paris.
Brussels 17·8	Brussels 3	London 40	Brussels.
Stockholm.. 16·3	Stockholm... 0	Brussels 40	Stockholm.
Berlin 15·6	Berlin..... -2	Stockholm ... 41	Berlin.
Vienna 14·1	Munich -2	Munich 41	Munich.
Munich..... 9·6	Vienna -2	Vienna 41	Vienna.

We had inserted in the general tables returns from Nice, but found that they were from M. Bischoffsheim's splendid observatory on Mont Gros, and on that lofty spot the temperature does not truly represent the city, and we have therefore struck them out and inserted those from Monaco. The results for Monaco and for Mont Gros are as follows :—

	Nice (Mont Gros).	Monaco.
Average Min.	34°·8	42°·1
Absolute Min.	25°	31°
Nights below 32°	8	2

Perhaps it would be fair to assume that the 25° on Mont Gros represented 28° in the town of Nice. We are not certain as to the best authority on the temperatures in Nice. Lee, in his "*Nice and its Climate*," gives (apparently on the authority of Roubadi) 27°·5 F. as the absolute lowest recorded up to the date of his book (1854). In Dr. West's translation of Dr. Baréty's "*Nice et son Climat*," we find the same value (27°·5 F.) given as the absolute minimum for January, and 37° F. for December, but he says that at sunrise on February 14th, 1854, the thermometer had fallen to 25°·9 F. It is, therefore, evident that the recent frost at Nice was unusual but not unprecedented.

Next let us take Perpignan. There, fortunately, the Observatory is in the town, and moreover the records extend far back, and have throughout been under the supervision of Dr. Fines. It will be seen* that these records have been continued for 43 years, and that once in January a temperature of 18°·5 was recorded; on January

* *Quar. Jour. Roy. Met. Soc.* xiii. p. 51.

18th, 1891, the temperature there fell to $16^{\circ}\cdot7$ F., or $1^{\circ}\cdot8$ lower than had ever been observed there.

We are not sure as to the quality of the observations from Biarritz, as we do not know whether they were sent by M. Sébie or from the Lighthouse—the latter would not accurately represent the climate of the town. Taking them, however, *quant. val.*, we have a minimum of 10° F., *i.e.*, 4° colder than London.

We have lately been reading Cotte's *Mémoires sur la Météorologie*, and have been much struck by his remarks upon the great improvement in, and development of, meteorological observations which resulted from the excessive frost of 1776. The Royal Society of London, the Académie des Sciences of Paris, in fact nearly all the learned bodies, were roused, and thermometry received a great impulse. So may it be with the frost of 1891. At our regular observing stations there is not much improvement needed. But thermometers have become too common and too low priced, it is too bad that persons should rush into print with records from thermometers bought as our correspondent Mr. Wright truthfully described in our last, and mounted—anyhow.

PHENOLOGICAL OBSERVATIONS.

To the Editor of the Meteorological Magazine.

SIR,—The observations of the first flowering of plants and the first appearance of birds and insects required by the Royal Meteorological Society have been now rendered so simple, that I hope all those of your readers who have been in the habit of making similar notes for "British Rainfall," may be induced to join the Society's staff of Phenological observers. It is not necessary that observers should be Fellows of the Royal Meteorological Society.

The number of plants to be noticed, has this year been reduced to thirteen, the number of birds to six, and the number of insects to five. The trees, shrubs and plants are such familiar ones as the horse-chestnut, hawthorn and coltsfoot. Of the six birds may be mentioned as equally well-known, the swallow, the cuckoo, and the nightingale; while the five insects are the honey bee, wasp and small white, orange tip, and meadow brown, butterflies. Observers may elect to observe either plants, birds or insects, or all three as they may feel disposed.

I need only add that I shall be very pleased to supply intending observers with forms, and to give any help or further information they require.

EDWARD MAWLEY,

Phenological Recorder to the Royal Meteorological Soc.

Rosebank, Berkhamsted, Herts.

REVIEW.

Results of the Magnetical and Meteorological Observations, made at the Royal Observatory, Greenwich, in the year 1888, under the direction of W. H. M. CHRISTIE, M.A., F.R.S., Astronomer Royal, London, 1890, 4to. lviii. + xci. pages and 11 plates.

It is obviously impossible for us to notice all the issues of serial publications, although it would be well so to do; we should have no room for anything else. The Greenwich volumes have a reputation which needs no addition from us. We certainly do not understand why they are so far behind date, that they cannot be brought up closer without a temporary strengthening of the staff is very likely. Years ago delay occurred, and that it is only by the above method that the arrears can be overtaken is quite probable; but we think that such a temporary effort should be made, and that the observations of 1889 ought to be issued before February, 1892.

The Greenwich authorities, unlike those of one of our other important observatories, are fully aware of the importance of continuity in meteorological work, and they adhere to the old "Glaisher's stand" which, by-the-by, according to the volume before us, ought to be called "Airy's stand." "The . . . thermometers . . . are mounted on a revolving frame, planned by Sir G. B. Airy." Be that, however, as it may, in 1887 a Stevenson screen was erected 11 feet E. of the old one, and the results as given by it for 1888 are printed *in extenso* in the present volume; and also the differences between the old stand and the Stevenson. The result for the year abstracted, yields the following values:—

	Old Stand above Stevenson.	Old Stand below Stevenson.	Old Stand above Stevenson.	Old Stand below Stevenson.	Corrected mean of M. & m. on Glaisher.	Arithmetical mean of M. & m. on Stevenson.	Arithmetical mean of 9 & 9 on Stevenson.
	Max.	Min.	9 a.m.	9 p.m.	deg.	deg.	deg.
January	deg. 0·3	deg. 0·3	deg. 0·0	deg. 0·0	37·5	37·7	37·2
February	0·4	0·3	0·2	0·0	34·9	35·2	34·7
March	1·0	0·2	0·2	0·2	37·9	38·6	37·8
April	1·7	0·3	0·2	0·1	43·3	44·1	43·0
May	1·8	0·5	0·3	0·2	52·2	53·2	52·5
June	2·2	0·3	0·4	0·1	57·6	58·4	57·3
July	2·0	0·4	0·2	0·1	57·6	58·7	57·9
August	1·8	0·4	0·1	0·2	58·7	59·8	59·0
September ...	1·1	0·6	0·0	0·1	56·1	57·1	55·7
October	0·8	0·5	0·1	0·2	45·6	46·4	45·3
November ...	0·5	0·3	0·0	0·1	46·6	46·9	46·3
December ...	0·3	0·3	0·1	0·1	40·8	40·8	40·1
Year	1·2	0·4	0·2	0·1	47·4	48·1	47·2

The serious part is, of course, the first column, which shows that the maxima on the old stand are on the average of the whole year $1^{\circ}2$ above those in the Stevenson, and on looking into the details we find that this excess reached or exceeded 3° on nine occasions, and on one hot day with bright sun, reached $4^{\circ}4$; thus confirming remarks previously made that the maxima reported for Greenwich on very hot days are exceptionally high. There is one rather curious fact with reference to these Maxima: Many years ago, Mr. Glaisher published a pamphlet, "Diurnal Range Tables," 4th edition, 1867, in which he gives "corrections to be applied subtractively to the simple arithmetical monthly mean of the readings of the maximum and minimum thermometers, to deduce from them the mean temperature of the air for the month." These corrections were based upon, and intended for use with, the Glaisher (or Airy) stand. Moreover, the Royal Meteorological Society has always held that the mean of the maximum and of the minimum in a Stevenson was very near the truth. In the later columns of the above table we give (1) the mean of the maximum and minimum on the old stand, corrected by Glaisher's table; (2) the mean of the maximum and minimum in the Stevenson, uncorrected; (3) the mean of the 9 a.m. and 9 p.m. in Stevenson, uncorrected.

As 1888 was rather a cold year, these results do not work out quite as accordantly as they would in an average year, that is to say the Glaisher corrections are rather too large, and they have the curious result of making the Greenwich stand *seem* to give too low a temperature. This correction, to the mean of the maximum and minimum, is doubtless really one for the excess of the maximum, and therefore in a cold year should be less than its average value, which is $-1^{\circ}1$. Suppose that the correction should in such a year be $-0^{\circ}7$, we should then have

Mean of M. and m. on Glaisher stand	$48^{\circ}5 - 0^{\circ}7 =$	$47^{\circ}8$.
" " Stevenson "	$48^{\circ}1$	$= 48^{\circ}1$.
" Hourly photographic record		$= 47^{\circ}8$.
" 9 a.m. & 9 p.m.		$= 47^{\circ}2$.

All, except the last, agreeing very closely.

While greatly admiring the persistency with which the Greenwich authorities adhere to their old systems, such as retaining the unique practice of dividing their days at midnight, we think that they might make one concession which would render their records comparable with the multitude of other stations throughout the country, viz., work their Stevenson stand *daily* throughout the year, and absolutely in accordance with the rules of the Royal Meteorological Society. The extra time required on Sundays would not be five minutes, and the noon and 3 p.m. observations daily throughout the year have now probably gone on long enough, and their abandonment would far outbalance the extra labour we suggest.

FROST PENETRATION.

To the Editor of the Meteorological Magazine.

SIR,—It would, I think, be interesting and instructive if some of your observers would furnish information as to how far the late long-continued frosts reached into the ground. I have tried in several parts of my garden and have not found the depth to which the frost penetrated to exceed 12 inches, and in most places not to have gone so far. Four of the holes which I had opened were in vegetable or flower borders, and one, which I had opened this morning, was under turf. I am told, however, by a builder here, on whom I think I can rely, that the water in a pipe was frozen solid, though covered by 18 inches of soil in the roadway; and I have been informed by a nurseryman here, and by more than one labourer, that the frost has gone down 22 and even 24 inches, and that, not in wet soil.

I imagined that this severe winter would have destroyed a great number of our garden pests, but a day or two ago, I found several slugs as happy as ever at the stem of a Christmas rose, where some dead leaves lay two or three thick, and my gardener tells me he found a caterpillar on the top of a plant of Brussels sprouts, which was quite lively when he took it in his hand and just breathed on it.

—Yours truly,

JAMES WESTON.

1, Camden Park, Tunbridge Wells,
30th January, 1891.

[We are sure that Mr. Mawley, of Berkhamstead, will not mind our quoting, for general information, a few lines which we recently received from him on the above subject:—

“Our supply of water from the town was cut off for a week, and yet the ground, owing to its dryness, was never frozen more than 8 inches deep. Temp. of ground at 1 foot, a degree below freezing, yet, on taking up the ground on the same grass plat, the soil was frozen barely 7 inches deep.”

Perhaps we may be allowed to add a few words on this subject, which, as regards water-supply and some other matters, is one involving thousands of pounds. With reference to the above letters, we should be glad to know in what way frozen dry soil differs from unfrozen. Dry sand at 50° below freezing would surely be just as mobile as at 50° above it. No observatory has such good instruments in such perfect order as Mr. Mawley has; how then could his thermometer at 1 foot show 31° if the ground around it was not frozen? Our impression is that both at Tunbridge Wells and at Berkhamstead the ground was frozen, but that there was not ice enough in it to make it hard. But we are quite ready to be converted.

The readings of the 1-foot thermometer in three frosts at Camden Square may be of interest:—

In January, 1880, there were 19 consecutive days with no rain or snow, except a sprinkle of 0·01 in. of snow, which soon dried up.

The max. was generally about 35° , and the min. about 25° ; the 1-ft. ther. fell steadily, and on the 13th day reached 32° ; on the next day, and all the subsequent six days (but one), the max. was between 40° and 50° , the min. about 28° , and the mean about 36° , but the 1-ft. thermometer remained at 32° until rain came, when it at once rose.

In January, 1881, we had three cold weeks, one of them far colder than any week either in 1880 or in 1891, the min. in one week averaging $15^{\circ}9$; and yet the 1-ft. thermometer never went below $33^{\circ}1$, and was there only two days—but there were 10 inches of snow on the ground.

In December, 1890, and January, 1891, we have had several cold weeks, colder than any in 1880, and yet the 1-ft. thermometer has never been below $32^{\circ}7$, and only there two days, but, though there has been nothing like the snow of 1881, the ground was generally covered.—ED.]

GRASS THERMOMETERS IN TIME OF SNOW.

To the Editor of the Meteorological Magazine.

SIR,—On page 187 of the last number of the *Meteorological Magazine*, it is stated in the course of an interesting note by the observer at Strathfield Turgiss, that “on the 22nd [of December, 1890] the minimum in the Stevenson stand dropped to $7^{\circ}5$ and on the grass (the snow having been swept away) fell to $4^{\circ}5$ (both thermometers being in exact working order, and Kew corrections applied).”

From the above it seems clear that the practice at Strathfield Turgiss when snow is lying upon the ground, is to sweep the same away from the grass upon which the terrestrial radiation thermometer is placed. May not exception be taken to this? In Scott’s “Instructions” we read, “whenever snow is lying, the radiation thermometer should be placed on its surface”; and on page 14 of Marriott’s “Hints” occurs the following sentence: “When the ground is covered with snow the thermometer should be placed on the surface of the snow.”

The difference between the heat-conducting and radiating powers of snow, and those of short grass, are too considerable to be ignored; and when a part of the earth’s surface is covered with snow, any observations of the extent of terrestrial radiation made upon grass from which the snow has been swept away, however interesting they may be as showing what might have occurred had no snow been lying, will certainly represent a state of things which, at that time, is non-existent in nature—at least in that particular locality. The larger the area that is freed from snow, the greater the error. The difference between the results obtained by the two methods will doubtless be far greater than the “Kew corrections,” which the Strathfield Turgiss observer seems careful to apply. It might be well to remember that the lowest temperature in a whole winter

(an important point to record correctly) not infrequently occurs at some stations when the ground is covered with snow.

Another class of discordances may probably now and then be occasioned (especially in changeable weather when the sky clears for short periods) by the employment of a highly sensitive minimum thermometer (*e.g.* Hicks' "Cylinder Jacket") at one station, and the old Spherical bulb at another.

Yours faithfully,

JOSEPH BAXENDELL.

The Observatory, Birkdale, Southport.

ROYAL METEOROLOGICAL SOCIETY.

The annual meeting of this Society was held on Wednesday, January 21st at the Institution of Civil Engineers, 25, Great George-street, Westminster. Mr. W. H. Dines, B.A., Vice-President, in the chair.

Dr. Tripe read the report of the Council, which stated that the progress of the Society during the past year had been satisfactory. Among the investigations carried on by the Society are the following :—The organization of a large number of meteorological stations, the observations from which are examined and reduced by the staff, and printed in the "Meteorological Record"; the regular inspection of these stations by the Assistant Secretary; the collection and discussion of Phenological Observations, and an inquiry into the Thunderstorms of 1888 and 1889. An Exhibition of Instruments is held annually in March. During the year, a complete catalogue of the Library, extending to 222 pages has been compiled and published. The Library has so much over-grown the present limited accommodation, that the Council have been obliged to consider the question of obtaining more commodious rooms, and have consequently inaugurated a "New Premises Fund," which is being well supported by the Fellows.

After the adoption of the Report, the Officers and Council for the ensuing year were elected.

At the ordinary meeting the following papers were read :—

1. "Note on a peculiar development of Cirrus Cloud observed in Southern Switzerland"; by Mr. R. H. Scott, M.A., F.R.S.
2. "Some remarks on Dew"; by Col. W. F. Badgley, F.R.Met. Soc. These are notes on observations, which were made to discover, whether all dew is deposited from the air, or if some also comes from the earth and plants, and also what quantity is formed during the year. The conclusions which the author deduces from his observations are :—(1.) That the earth always exhales water vapour by night, and probably a greater quantity by day; (2.) That the quantity of water vapour given off by the earth is always considerable, and that any variation in the quantity is mainly due to the season of the year; (3.) That the greater part of the dew comes from the earth vapour; and (4.) That plants exhale water vapour, and do not exude moisture. The total quantity of dew collected on the author's plates in the year, was 1·61 ins.

ORIGIN OF A WHIRLWIND.

[Although very much after date, we think that the following report ought not to be excluded.—ED.]

A strange ærial phenomenon was recently observed at Neu-Münster, in Holstein. At a considerable height, a current of air was moving with tremendous velocity from east to west. Somewhat lower there was an opposite and much slower current. After this had continued for some time, the two currents suddenly developed into a whirlwind, which did immense damage, raising from the ground and destroying a large barn, and tearing great trees out of the earth as if they were only so many straws.

The Standard, July 17th, 1890.

BRIGHT METEOR, DECEMBER 14TH, 1890.

To the Editor of the Meteorological Magazine.

SIR,—As the *Meteorological Magazine* usually takes notes of meteors of exceptional brilliancy, I was somewhat disappointed to find no mention in your January number of that which was seen about 9.40 p.m. or 9.45 p.m. on Sunday, December 14th. I was not fortunate enough to see it myself, but from the accounts of those who were, it must have been one of great magnitude. The only reference to it, which I saw in the daily papers, was a short paragraph in the *Times*, stating that a large meteor had been seen that evening at Ramsgate. Possibly the publication of this might bring you information about it from some of your numerous observers.—Yours faithfully,

J. W. SCOTT.

Elleray, Etchingham Park, Finchley, N., Feb. 4th, 1891.

[Yes, Mr. Scott is quite right. Unfortunately the editorial “we” has far too much to do, and far too little help, and unless by some miracle the circulation of the *Met. Mag.* is increased 100-fold or 1,000-fold, so as, for instance, to bring it to that of the *Leisure Hour* or a “penny dreadful,” we do not see much prospect of improving matters.—The meteor was a remarkably fine one, the light being greater than that usually received from a full moon; it was seen as far north as Bury St. Edmunds, as far west as Middlesex, and as far east as Ramsgate. We can find very little information as to its path, which was apparently from N. to S., and possibly not far from the meridian of Greenwich. Most persons who saw it appear to have either been ignorant of what to observe, or to have been too much astonished to give proper details of what they saw. Nearly all seem to have had the idea that it fell within a mile or so of them. That this was not the case, is sufficiently proved by the distance between, e.g., Sittingbourne and Bury St. Edmunds (70 miles), or Finchley and Ramsgate (60 miles), it could not have been close to all of them, and also by the fact that no one reported any sound.—ED.]

CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE, JULY, 1890.

STATIONS. (Those in italics are South of the Equator.)	Absolute.				Average.				Absolute.		Total Rain.		Aver. Cloud.
	Maximum.		Minimum.		Max.	Min.	Dew Point.	Humidity.	Max. in Sun.	Min. on Grass.	Depth.	Days.	
	Temp.	Date.	Temp.	Date.									
	°		°		°	°	°	0-100	°	°	inches		
England, London	76·2	23a	42·4	12	69·3	52·6	51·1	74	126·9	40·6	4·20	14	6·4
Malta.....	92·2	18	62·7	25	85·3	68·8	64·0	67	145·9	57·0	...	...	0·6
<i>Cape of Good Hope</i> ...	71·0	11	31·6	18	59·6	44·7	...	...	...	...	6·39	...	6·2
<i>Mauritius</i>	75·0	2	53·5	26	72·8	61·7	58·4	75	123·2	47·4	4·30	21	4·7
Calcutta.....	90·1	18	75·2	28	87·0	77·0	78·1	86	156·9	73·9	10·29	24	7·9
Bombay.....	85·6	8	74·5	16b	83·3	76·2	75·5	86	134·0	72·4	21·54	31	9·5
Ceylon, Colombo	86·7	...	72·0	29	84·5	74·2	71·6	80	147·0	69·0	3·32	12	5·5
<i>Melbourne</i>	62·4	18	29·0	16	54·7	40·1	41·8	82	112·0	23·6	2·71	13	6·5
<i>Adelaide</i>	60·3	18	34·2	17	57·1	43·3	42·8	79	134·5	25·0	5·36	20	5·9
<i>Wellington</i>	58·0	10	33·0	18	52·7	42·6	42·4	83	101·0	28·0	8·95	25	5·5
<i>Auckland</i>	64·0	11	42·0	18c	58·8	49·0	47·0	78	115·0	32·0	5·19	28	7·6
Jamaica, Kingston.....	94·4	21	68·6	1	89·5	72·3	70·4	69	...	...	·34	...	...
Trinidad	95·0	16	61·0	2	86·3	68·6	71·1	80	154·0	60·5	12·89	18	...
Toronto	85·3	31	47·2	21	77·1	58·0	59·4	74	...	40·2	4·11	11	4·0
New Brunswick, Fredericton	86·0	29	42·0	19	76·8	54·3	58·8	72	...	...	2·44	13	5·0
Manitoba, Winnipeg ...	90·1	27	42·3	9	80·1	54·6	57·2	73	...	...	5·58	13	3·0
British Columbia, Victoria	...	...	...	...	...	...	...	...	...	...	...	...	...

a And 24. b And 17. c And 21.

REMARKS.

MALTA.—Mean temp. 75°·8; mean hourly velocity of wind, 8·5 miles; sea temp. rose from 76°·5 to 80°·0; L on 12th.

J. SCOLES.

Mauritius.—Mean temp of air, 1°·7 below, mean dew point 0°·9 below, and R 2·00 in above their respective averages; mean hourly velocity of wind, 10·0 miles, or 2·0 below average; extremes 24·1 on 13th and 2·4 on 26th; prevailing direction, S.E. by E.

C. MELDRUM, F.R.S.

Melbourne.—Mean temp. of air, 0°·6 below average. Mean temp. of dew point 0°·4, humidity 2, amount of cloud 0·2, and R ·99 in. above their respective averages. Prevailing winds N. and N.E., strong on 6 days; heavy dews on 8 days; dense fog on 8 days; hoarfrost on 3 days; L on 13th.

R. L. J. ELLERY, F.R.S.

Adelaide.—Although there was little frost the month was cold, the mean temp. being 1°·5 below the average of 33 years. The mean pressure was 0·069 in. below the average, and the extreme range was greater than usual. The month was very wet, the total being 2·82 in. above the average, and it was the wettest July on record, with the exception of 1865, when, however, only ·017 in. more was registered.

C. TODD, F.R.S.

Wellington.—Wet weather almost throughout the R being 2·85 in. above the average; fog on 3 days; L on 9th and 10th; prevailing wind S.E.; temperature exactly the average.

R. B. GORE.

Auckland.—A showery, stormy, and disagreeable month; rain being recorded on every day but three. Mean temp. 1° above the average; R ·50 in. above the average.

T. F. CHEESEMAN.

SUPPLEMENTARY TABLE OF RAINFALL,
 JANUARY, 1891.

[For the Counties, Latitudes, and Longitudes of most of these Stations,
 see *Met. Mag.*, Vol. XIV., pp. 10 & 11.]

Div.	STATION.	Total Rain.	Div.	STATION.	Total Rain.
		in			in.
II.	Dorking, Abinger Hall.	2.72	XI.	Llanwrtyd Wells	4.52
„	Margate, Birchington...	1.60	„	Rhayader, Nantgwillt..	6.45
„	Brighton, Prestonville Rd	2.29	„	Corwen, Rhug	1.63
„	Hailsham	3.25	„	Carnarvon, Cocksidia ...	2.85
„	Ryde, Thornbrough	3.21	„	I. of Man, Douglas	1.90
„	Alton, Ashdell	3.54	XII.	Stoneykirk, Ardwell Ho.	1.73
III.	Oxford, Magdalen Col...	1.40	„	New Galloway, Glenlee	5.50
„	Banbury, Bloxham	2.00	„	Melrose, Abbey Gate...	1.99
„	Northampton	1.67	XIII.	N. Esk Res. [Penicuik]	2.10
„	Cambridge, Fulbourne..	2.80	XIV.	Ballantrae, Glendrisaig	2.33
„	Wisbech, Bank House..	1.73	„	Glasgow, Queen's Park.	3.87
IV.	Southend	.83	XV.	Islay, Gruinart School..	4.31
„	Harlow, Sheering ...	1.62	XVI.	Dollar	2.27
„	Rendlesham Hall	2.31	„	Balquhider, Stronvar..	6.64
„	Diss	2.25	„	Coupar Angus Station..	1.17
„	Swaffham	2.42	„	Dunkeld, Inver Braan..	2.39
V.	Salisbury, Alderbury ...	2.35	„	Dalnaspidal H.R.S. ...	6.48
„	Warminster	2.25	XVII.	Keith H.R.S.	1.57
„	Bishop's Cannings	2.00	„	Forres H.R.S.	1.61
„	Ashburton, Holne Vic...	7.43	XVIII.	Fearn, Lower Pitkerrie.	1.35
„	Okehampton, Oaklands.	4.45	„	Loch Shiel, Glenaladale	...
„	Lynmouth, Glenthorne.	5.14	„	N. Uist, Loch Maddy ...	5.66
„	Probus, Lamellyn	3.48	„	Invergarry	8.24
„	Launceston, S. Petherwin	...	„	Aviemore H.R.S.	2.12
„	Wincanton, Stowell Rec.	2.23	„	Loch Ness, Drumnadrochit	3.21
„	Wells, Westbury	2.51	XIX.	Lairg H.R.S.	...
VI.	Bristol, Clifton	3.83	„	Scourie	4.76
„	Ross, the Graig	1.91	„	Watten H.R.S.	.87
„	Wem, Clive Vicarage ...	1.61	XX.	Dunmanway, Coolkelure	3.96
„	Cheadle, The Heath Ho.	2.26	„	Fermoy, Gas Works ...	...
„	Worcester, Diglis Lock	1.72	„	Darrynane Abbey	3.37
„	Coventry, Coundon	2.53	„	Tipperary, Henry Street	2.59
VII.	Ketton Hall [Stamford]	1.42	„	Limerick, Kilcornan ...	2.00
„	Grantham, Stainby	1.52	„	Ennis	2.52
„	Horncastle, Bucknall ...	1.62	„	Miltown Malbay	1.94
„	Worksop, Hodsock Priory	1.30	XXI.	Gorey, Courtown House	1.54
VIII.	Neston, Hinderton	1.21	„	Mullingar, Belvedere ...	1.16
„	Knutsford, Heathside ...	2.02	„	Athlone, Twyford	1.58
„	Lancaster, Southfield ...	2.19	„	Longford, Currygrane...	1.52
„	Broughton-in-Furness ..	3.27	XXII.	Galway, Queen's Coll...	2.21
IX.	Ripon, Mickley	2.00	„	Crossmolina, Enniscoe..	3.56
„	Scarborough, West Bank	1.03	„	Collooney, Markree Obs.	2.83
„	East Layton [Darlington]	1.01	„	Ballinamore, Lawderdale	1.93
„	Middleton, Mickleton ..	2.29	„	Lough Sheelin, Arley ..	1.53
X.	Haltwhistle, Unthank..	1.77	XXIII.	Warrenpoint	1.23
„	Bamburgh	.86	„	Seaforde	1.17
„	Shap, Copy Hill	6.50	„	Belfast, New Barnsley..	...
XI.	Llanfrechfa Grange	4.14	„	Bushmills, Dundarave...	2.24
„	Llandovery	5.22	„	Stewartstown	1.85
„	Castle Malgwyn	...	„	Buncrana	3.08

JANUARY, 1891.

Div.	STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL.					Days on which ·01 or more fell.	TEMPERATURE.				No. of Nights below 32°	
		Total Fall.	Differ- ence from average. 1880-9.	Greatest Fall in 24 hours.		Max.		Min.					
				Dpth	Date			Deg.	Date	Deg.	Date		
												inches.	inches.
I.	London (Camden Square) ...	1·80	+	18	35	23	14	53·0	31	16·9	11	22	25
II.	Maidstone (Hunton Court)...	1·56	+	01	37	29	10	...	...	...	...	...	...
III.	Strathfield Turgiss	1·73	—	08	32	29	14	52·2	31	11·2	19	22	27
IV.	Hitchin	1·59	+	05	25	20	15	50·0	31	12·0	10 ^e	23	...
V.	Winslow (Addington)	2·03	+	22	48	23	14	51·0	28	8·0	11 ^f	22	26
VI.	Bury St. Edmunds (Westley)	2·22	+	75	32	23	13	...	...	...	...	...	...
VII.	Norwich (Cossey)	2·04	+	55	32	15	18	31·0	18	7·0	10	12	27
VIII.	Weymouth (Langton Herring)	2·50	+	16	52	29	15	49·0	28	17·0	19	15	...
IX.	Barnstaple	2·67	—	35	62	23	12	58·0	25	16·0	19	...	...
X.	Bodmin (Fore Street)	4·42	+	41	91	31	18	...	...	...	...	...	...
XI.	Stroud (Upfield)	2·62	—	42	75	23	12	53·0	28	14·0	18	23	...
XII.	Church Stretton (Woolstaston)	3·14	+	98	90	31	17	48·0	23 ^b	15·0	18	18	25
XIII.	Tenbury (Orleton)	1·99	—	15	30	20	14	51·8	27	6·0	19	20	23
XIV.	Leicester (Barkby)	1·69	—	07	50	31	14	52·0	28	3·0	18	22	27
XV.	Boston	1·10	—	29	35	20	9	50·0	27	10·0	19	26	...
XVI.	Hesley Hall [Tickhill]	1·10	—	67	28	20	13	50·0	29	9·0	19	23	...
XVII.	Manchester (Plymouth Grove)	2·38	—	08	70	20	12	51·0	29 ^c	16·0	17	18	25
XVIII.	Wetherby (Ribston Hall) ..	1·09	—	80	26	25	9	...	...	...	...	...	...
XIX.	Skipton (Arncliffe)	...	...	...	...	...	...	...	...	...	...	...	...
XX.	Hull (Pearson Park)	1·30	—	47	20	24	20	...	...	...	...	...	...
XXI.	Newcastle (Town Moor)	1·10	—	71	30	15	14	...	...	...	...	...	...
XXII.	Borrowdale (Seathwaite) ..	11·34	—	84	2·20	26	20	...	...	...	...	...	...
XXIII.	Cardiff (Ely)	3·91	+	62	1·17	23	15	...	...	...	...	...	...
XXIV.	Haverfordwest	4·41	—	01	77	8	19	49·9	11	14·5	5	17	25
XXV.	Carno (Tybrith)	4·71	+	46	1·10	20	19	43·0	23	8·0	17	26	...
XXVI.	Llandudno	1·64	—	64	51	24	13	53·0	26	20·0	18	7	...
XXVII.	Cargen [Dumfries]	3·38	—	39	81	20	14	49·0	12	17·0	8, 18	17	...
XXVIII.	Jedburgh (Sunnyside)	1·17	—	55	32	23	9	49·0	12	10·0	18	18	...
XXIX.	Old Cumnock	2·99	—	1·00	68	20	14	50·0	28	12·0	17	22	...
XXX.	Lochgilthead (Kilmory)	5·58	—	56	92	22	23	...	...	20·0	4, 5	16	...
XXXI.	Oban (Craigvarren)	4·83	...	1·04	20	21	21	50·0	28	25·9	6	9	...
XXXII.	Mull (Quinish)	5·84	+	17	68	19	22	...	...	...	...	...	...
XXXIII.	Loch Leven Sluices	2·70	—	26	80	31	11	...	...	...	...	...	...
XXXIV.	Dundee (Eastern Necropolis)	75	—	1·22	15	20 ^a	10	50·2	12	19·4	8	18	...
XXXV.	Braemar	2·13	—	56	42	20	16	49·8	12	8·0	7	22	26
XXXVI.	Aberdeen (Cranford)	1·02	...	15	29	21	21	55·0	12	17·0	6	19	...
XXXVII.	Strome Ferry	5·66	—	33	96	19	24	...	...	...	...	...	...
XXXVIII.	Inverness (Culloden)	1·31	—	31	...	...	...	51·0	12 ⁱ	23·0	23	16	28
XXXIX.	Dunrobin	2·11	—	35	69	24	15	53·0	12	23·0	7	21	...
XL.	S. Ronaldsay (Roeberry)	2·05	—	90	35	11	23	51·0	11	28·0	20 ^h	...	13
XLI.	Dromore Castle	4·59	—	1·48	1·04	22	14	51·0	14	24·0	6	...	...
XLII.	Waterford (Brook Lodge) ...	1·87	—	1·69	30	7	17	52·0	28	17·0	7	14	...
XLIII.	O'Briensbridge (Ross)	2·39	...	58	20	16	16	52·0	25	25·0	7	12	...
XLIV.	Carlow (Browne's Hill)	1·66	—	1·24	40	20	20	...	...	...	...	...	...
XLV.	Dublin (Fitz William Square)	67	—	1·19	18	20	14	53·7	26 ^d	23·9	7	7	21
XLVI.	Ballinasloe	1·85	—	1·23	25	7	20	47·0	26	14·0	7	26	...
XLVII.	Clifden (Kylemore)	6·55	...	1·48	7	20	...	...	...	...	...	...	...
XLVIII.	Waringstown	1·47	—	1·18	20	20	18	53·0	26 ^d	17·0	6, 7	15	21
XLIX.	Londonderry (Creggan Res.) ..	2·99	—	43	65	21	23	...	...	...	...	...	...
L.	Omagh (Edenfel)	2·00	—	1·02	33	21	26	50·0	30	20·0	6	15	18

a And 22. *b* And 28, 29. *c* And 30. *d* And 28. *e* And 17. *f* And 19. *g* And 18.

h And 21, 22. *i* And 13.

+ Shows that the fall was above the average ; — that it was below it.

METEOROLOGICAL NOTES ON JANUARY, 1891.

ABBREVIATIONS.—Bar. for Barometer; Ther. for Thermometer; Max. for Maximum; Min. for Minimum; T for Thunder; L for Lightning; T S for Thunderstorm; R for Rain; H for Hail; S for Snow.

ENGLAND.

STRATHFIELD TURGISS.—The first three weeks of the new year brought continued severe weather, and until the 23rd no great change took place. On the 2nd, 6th, 7th, 10th, 11th, 17th and 18th, the maximum was below freezing point. From the 22nd to the close of the month there was more or less R every day, with a more genial temperature. Grass min. on 19th, $6^{\circ}3$.

ADDINGTON.—Frost occurred on every night except one from the 1st to the 23rd, and was often very severe. On the 23rd a great increase in the temp. took place, and put an end to the very long period of frosty weather. The melting of the snow caused a very large flood, and great blocks of ice were carried out on to the meadows and in quantities never before observed.

BURY ST. EDMUNDS, WESTLEY.—The first twenty-three days of the month were very cold, the min. in the shade being below 32° every day except the 13th. The greatest cold was on the night of the 17th, when Casella's Kew verified thermometer, exposed 1 ft. above ground, registered $-0^{\circ}5$. Swedes and turnips were much damaged, but owing to absence of wind tender shrubs received very little injury.

LANGTON HERRING.—The early part of the month was fine, dry and very cold. From Nov. 25th, 1890, to Jan. 22nd, 1891, inclusive, the temp. was below the average, with the single exception of Dec. 1st, but for fifty-two consecutive days—Dec. 2nd to Jan. 22nd—it was below the average. On the 18th the temp. on the grass fell to 10° , and on the 19th to 11° . At sunset on the 19th the max. for the day was 31° , but the temp. rose in the evening to 35° . Bar. very high from 10th to 15th. Mean temp. at 9 a.m. $5^{\circ}0$, and mean of max. and min. $4^{\circ}6$ below the average.

BODMIN, FORE STREET.—A month of unprecedented severity, frost lasting without break from the 4th to the 20th, with very cold wind, generally N.E. or E. The coldest January recorded for many years. R every day from the 19th to the 31st. Very heavy R and high winds on the 30th and 31st after 10 p.m.

STROUD, UFFIELD.—The thermometer was below freezing point for 22 days in succession.

WOOLSTASTON.—The long and severe frost continued, with occasional slight intervals of thaw, till the 23rd, when a real thaw set in. S fell on the 4th, 8th, and 16th. Mean temp. $34^{\circ}8$.

ORLETON.—The first 19 days were intensely cold, the 9 a.m. reading averaging $26^{\circ}5$, or nearly 11 degrees below the average for the month. The remainder of the month was very warm and pleasant, the mean for the whole being $4^{\circ}7$ below the average. Nearly all the R fell after the 19th. S on the 8th, 16th, and 17th.

LEICESTER, BARKBY.—Forty-eight consecutive days of frost, from Dec. 6th, 1890, to Jan. 22nd, 1891, inclusive. Mean temp. for the month, $31^{\circ}7$.

MANCHESTER, PLYMOUTH GROVE.—The month commenced with a gentle thaw and milder weather, but from 11th to 19th it was very wintry. On the 20th a complete thaw set in, with heavy R. The last week fine spring-like weather. Fog on 2nd, 3rd, 4th, 7th and 12th, and dense on 13th. S on 8th, 16th, 19th and 21st. Mean temp. $35^{\circ}4$.

HULL, PEARSON PARK.—From the 1st to the 25th the weather was frosty, with slight falls of H and S, E. or N.E. winds prevailing. From the 25th to the end of the month it was mild with slight showers of R, and S. or S.W. winds. Generally overcast or very cloudy during the mornings, and either clear or with a small amount of light cloud during the afternoon and evening, throughout the month.

WALES.

" HAVERFORDWEST.—The weather, already severe, became more so during this month, and it was the coldest since January, 1881, but far below that in severity. From the 20th to the end, the weather was wet, and sometimes stormy and mild. Skating was enjoyed for about a fortnight, the ice reaching a thickness of four inches.

SCOTLAND.

CARGEN.—During the month several sharp frosts took place, interspersed with a day or two of mild weather. The changes in temp. were very marked—*e.g.*, on the 8th the mean temp. for the 24 hours was $25^{\circ}\cdot9$, while on the 11th it was $45^{\circ}\cdot2$. The last six days were unusually mild for January, the mean temp. being $42^{\circ}\cdot6$. On the 20th S fell to the depth of $4\frac{1}{2}$ inches, with the exception of a few trifling showers, the only S that has fallen this winter. A severe gale, which lasting only a few hours, occurred on the morning of the 31st; trees were blown down and other damage was done. On the 14th the sea level pressure was $30\cdot810$ in., which, with the exception of March, 1874, and January, 1882, is the highest recorded here for thirty-one years.

JEDBURGH.—The weather was cold and ungenial, with much frost. and the root crops were much injured. S fell on 4 days.

OBAN.—The month was comparatively dry, and the temperature low. There was an absence of severe gales, and growth did not cease in favoured parts. Some S fell on the 18th, 19th, and 20th. Close of the month rainy.

IRELAND.

DROMORE.—The early part of the month was dry and frosty.

WATERFORD, BROOK LODGE.—Mean temp. $39^{\circ}\cdot3$.

O'BRIENSBRIDGE, ROSS.—Some S fell on different occasions up to the 20th, but to no considerable extent. Sharp frosts occurred every night from 5th to 16th, but a rise of temp. took place after the 20th, and on 27th the min. in shade was 45° . No snowdrops or crocuses.

DUBLIN.—The period of cold, which was ushered in by the phenomenal snow storm of November 27th, 1890, lasted with slight and temporary intermissions until the 23rd of January, when the south-westerly type of weather became permanently established over Western Europe, strong S. to W. winds, high variable temp., and frequent showers prevailing day after day to the end of the month. Mean temp. ($40^{\circ}\cdot1$) $1^{\circ}\cdot3$ below the average. Solar halos on 18th and 31st; fogs on 8 days; high winds on 13 days, gales on 20th and 31st; H on 17th and 24th; and S or sleet on 19th and 21st. Temp. exceeded $50^{\circ}\cdot0$ in the screen on only 5 days compared with 17 days in January, 1890.

BALLINASLOE.—A fine month generally, but very cold to the 18th. Barometer unusually high; $30\cdot77$ in. on 14th (reduced to sea level).

EDENFEL.—A dull, fine month, with a preponderance of polar and easterly winds, light frosty nights, and thawing days. The last week unsettled. Extraordinary high bar. up to the 20th.

EARLY METEOROLOGY.

DR. HELLMANN and others will be glad to hear that Walter Merle's MS. has been found, and that efforts are being made to reproduce it with a translation.